In the Claims:

Claims 1-52 and 56-76 are pending in this application. Claims 53-55 and 77-86 are canceled. Claims 38-86 are canceled.

1. (currently amended) A method of scanning an optical beam, comprising:

optically coupling at least one or more beams with at least a first part and a second part ~~a first beam and a second beam~~ to an optical conduit;

encoding at least information about a set of one or more positions of the optical conduit on at least the second part ~~beam~~;

measuring at least the set of one or more positions of the optical conduit from at least the second part ~~beam~~;

bending at least the optical conduit, at least partly in response at least to measuring the set of one or more positions of the optical conduit; and

modifying at least the first part ~~beam~~ exiting a distal end of the optical conduit.

2. (original) The method of claim 1, wherein bending the optical conduit includes:

determining the set of one or more positions of the optical conduit in response to at least controlling one or more of: one or more magnetic fields and one or more electric fields.

3. (original) The method of claim 1, wherein bending the optical conduit includes:

determining the set of one or more positions of the optical conduit in response to at least controlling one or more of: one or more piezoelectric drives and one or more motor drives.

4. (currently amended) An optical beam scanner apparatus, comprising:

an optical conduit conveying at least one or more beams with at least a first part and a second part ~~a first beam~~;

an actuator connected to at least the optical conduit;

a motivator at least partly inducing motion in at least the actuator, the optical

conduit connected to the actuator, and the first part ~~beam~~ exiting a distal end of the optical conduit;

a patterned optical element encoding at least a set of positions of the optical conduit on at least part of at least the second part ~~a second beam~~; and

a servo driving at least the motivator at least partly in response to at least the encoded positions on the second part ~~beam~~.

5. (original) The apparatus of claim 4, wherein the patterned optical element includes at least one bar pattern.

6. (original) The apparatus of claim 4, wherein the patterned optical element includes at least one shaded pattern.

7. (previously presented) The apparatus of claim 6, wherein the at least one shaded pattern includes at least one gradual shading pattern.

8. (original) The apparatus of claim 4, wherein the optical conduit includes a light pipe.

9. (original) The apparatus of claim 8, wherein the light pipe is fabricated from at least a rod.

10. (original) The apparatus of claim 8, wherein the light pipe is fabricated from at least a tube.

11. (original) The apparatus of claim 4, wherein a cross-section of the optical conduit substantially has at least one of the following shapes: a circle, an annulus, a square, a rectangle, and an oval.

12. (original) The apparatus of claim 4, wherein the optical conduit has at least an electrically conductive coating.

13. (original) The apparatus of claim 4, wherein the optical conduit includes an optical fiber.

14. (original) The apparatus of claim 4, wherein the optical conduit includes:

a core;

a cladding about the core; and

a reflective coating about the cladding.

15. (original) The apparatus of claim 4, wherein the position sensor includes a capacitor plate, and the position sensor measures a capacitance between an electrical conductor connected to the optical conduit and the capacitor plate, and thereby at least partly measures the first set of one or more positions of the optical conduit.

16. (original) The apparatus of claim 4, wherein the motivator includes a motor driver.

17. (original) The apparatus of claim 4, wherein the motivator includes a piezoelectric driver.

18. (original) The apparatus of claim 4, wherein the motivator includes a field generator generating a field.

19. (original) The apparatus of claim 18, wherein the actuator includes an electrical conductor connected to the optical conduit, the field generator includes a capacitor plate generating the field, and the field includes an electric field.

20. (original) The apparatus of claim 19, wherein the position sensor includes a capacitor plate, and the position sensor measures a capacitance between the electrical conductor and the capacitor plate, and thereby at least partly measures the first set of one or more positions of the optical conduit.

21. (original) The apparatus of claim 18, wherein the actuator includes a permanent magnet connected to the optical conduit, the field generator includes an electromagnet

generating the field, and the field includes a magnetic field.

22. (original) The apparatus of claim 4, wherein the optical conduit is made out of at least plastic.

23. (original) The apparatus of claim 4, wherein the optical conduit is made out of at least glass.

24. (original) The apparatus of claim 4, further comprising:

a light source generating light optically coupled to the optical conduit; and

a detector array optically coupled to the optical conduit,

wherein the optical conduit blocks a portion of the light generated by the light source, thereby creating a shadow falling on the detector array and generating a signal that at least partly measures the first set of one or more positions of the optical conduit.

25. (original) The apparatus of claim 4, further comprising:

a light source generating light optically coupled to the optical conduit;

a lens optically coupled to the optical conduit; and

a detector array optically coupled to the lens,

wherein the optical conduit reflects a portion of the light generated by the light source through at least the lens onto at least the detector array, thereby generating a signal that at least partly measures the first set of one or more positions of the optical conduit.

26. (original) The apparatus of claim 4, further comprising:

a light source generating light optically coupled into the optical conduit;

a beam splitter optically coupled to light exiting the optical conduit; and

a position sensing detector optically coupled to light exiting the optical conduit via at least the beam splitter,

wherein light exiting the optical conduit falls on the position sensing detector, thereby generating a signal that at least partly measures the first set of one or more positions of the optical conduit.

27. (original) The apparatus of claim 4, further comprising:

a light source generating light optically coupled into the optical conduit;

a beam splitter optically coupled to light exiting the optical conduit; and

a position sensing detector optically coupled to light exiting the optical conduit via at least the beam splitter,

wherein light exiting the optical conduit falls on the position sensing detector, thereby generating a signal that at least partly measures the first set of one or more positions of the optical conduit further comprising:

a chamber enclosing at least: a portion of the optical conduit including a distal end of the optical conduit, and the actuator,

wherein the chamber is capable of maintaining a pressure difference between an inside of the chamber and an outside of the chamber, and the chamber allows at least one of one or more magnetic fields and one or more electric fields to pass through at least a portion of one or more walls of the chamber to the inside of the chamber from the outside of the chamber;

a seal in the chamber,

wherein the seal holds the optical conduit, and the seal allows at least the optical conduit to enter the chamber, and the seal allows the pressure difference to be maintained between the inside of the chamber and the outside of the chamber; and

a window sealed in the chamber,

wherein the window allows at least a portion of a beam exiting the distal end of the optical conduit to leave the chamber.

28. (original) An optical beam scanner apparatus, comprising:

one or more optical conduits conveying at least a first set of beams;

one or more actuators connected to at least the one or more optical conduits;

one or more motivators at least partly inducing motion in at least the one or more actuators, the one or more optical conduits connected to the one or more actuators, and the first set of beams exiting distal ends of the one or more optical conduits;

one or more patterned optical elements encoding at least positions of the one or

more optical conduits on at least part of at least the second set of beams; and

one or more servos driving at least the one or more motivators at least partly in response to at least the encoded positions on the second set of beams.

29. (original) The apparatus of claim 28, wherein the one or more patterned optical elements include at least one bar pattern.

30. (original) The apparatus of claim 28, wherein the one or more patterned optical element include at least one shaded pattern.

31. (original) The apparatus of claim 30, wherein the at least one shaded pattern includes at least one gradual shaded pattern.

32. (original) The apparatus of claim 28, further comprising:

one or more light sources generating light conveyed by the one or more optical conduits; and

one or more detectors optically coupled to the one or more patterned optical elements.

33. (original) The apparatus of claim 28, wherein at least two of the optical conduits are connected to form a multiple conduit structure, and the multiple conduit structure has different stiffnesses in a first and a second direction.

34. (original) The apparatus of claim 28, wherein the one or more motivators include one or more field generators generating one or more fields.

35. (original) The apparatus of claim 34, wherein the one or more servos drive the one or more field generators to generate a raster scan pattern of distal ends of the one or more optical conduits.

36. (original) The apparatus of claim 34, wherein the one or more servos drive the one or more field generators to generate a vector scan pattern of distal ends of the one or

more optical conduits.

37. (original) The apparatus of claim 34, wherein the one or more servos drive the one or more field generators to generate a combination of a raster scan pattern and a vector scan pattern of distal ends of the one or more optical conduits.

38-86. (canceled)